

IFW



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

ANTHONY A. BARRETTO ET AL

Serial No. 10/827,557 (TI-33631.1)

Filed April 20, 2004

For: SUBSTRATE ALIGNMENT METHOD AND APPARATUS

Art Unit

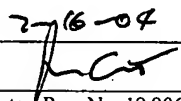
Examiner

Customer No. 23494

Director of the United States  
Patent and Trademark Office  
P. O. Box 1450  
Alexandria, VA 22313-1450

**CERTIFICATE OF MAILING OR TRANSMISSION UNDER 37 CFR 1.8**

I hereby certify that the attached document is being deposited with the United States Postal Service with sufficient postage for First Class Mail in an envelope addressed to Director of the United States Patent and Trademark Office, P.O. Box 1450,, Alexandria, VA 22313-1450 or is being facsimile transmitted on the date indicated below:

27-16-04  
  
Jay M. Cantor, Reg. No. 19,906

**PETITION TO ACCEPT ALLEGEDLY MISSING PAGES**

Sir:

In response to the Notice of Omitted Item(s) dated June 30, 2004, applicants hereby request that the allegedly missing pages attached hereto be accepted and placed in the file of the subject application in their proper order without requirement of a new declaration or payment of any additional fees.

The facts are that the subject application is a division of Serial No. 10/066,295, the contents of which were incorporated by reference. Since the specification and claims of the subject application and the above-noted divisional application are identical except for paragraph markings, the allegedly missing pages were initially filed in the subject

application by reference to the identical pages in the parent application. Accordingly, the introduction of the allegedly missing pages, which are attached hereto, is not new matter and can be entered in the subject application on that basis. Such action requires no petition, declaration or fees, especially since the declaration as filed pertains to the parent application which contained all of the allegedly missing pages.

In the event the above Petition is not accepted, it is requested that the attached omitted pages be accepted along with the declaration as originally filed with any fees being assessed to Deposit Account No. 20-0668. A copy of the Notice of Omitted Item(s) is attached hereto.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'Jay M. Cantor', with a stylized flourish at the end.

Jay M. Cantor

Reg. No. 19906

(301) 424-0355

(972) 917-5293

substrates are not lying perfectly horizontal because they may not be fully seated within depressions built into the tray designed to hold the substrates. When the substrate is not fully horizontal with respect to the vacuum pickup the chances of the vacuum pickup being able pick up the substrate goes  
5 down. Should a substrate not be picked up, intervention is often required to fix the positioning of the substrate to permit the vacuum pickup to attach to the substrate.

[0004] Intervention is not desired in an efficient packaging process since it often requires stopping the packaging process and a human operator making  
10 the required adjustments. Intervention slows down the process and increases overall production costs.

[0005] Solutions using custom designed substrate trays can reduce the number of substrates that are not lying horizontally, but they typically require a special tray for each size and type of substrate. This increases the costs and  
15 overhead associated with the packaging process, especially in packaging plants that process a wide variety of different substrates.

[0006] Therefore, a need has arisen for a method and apparatus that can increase the probability of a vacuum pickup forming a solid bond with a substrate by ensuring that the substrates are lying horizontal with respect to  
20 the vacuum pickup.

[0009] The present invention provides a number of advantages. For example, use of a preferred embodiment of the present invention reduces the probability of requiring intervention in a packaging process by reducing the chance of a substrate not being picked up by a vacuum pickup down to  
5 almost zero. The net result is an increase in productivity.

[0010] Also, use of a preferred embodiment of the present invention incurs no additional cost during normal packing operations. The only costs incurred involve the creation of a plate used to lift the substrates.

#### 10 BRIEF DESCRIPTION OF THE DRAWINGS

[0011] The above features of the present invention will be more clearly understood from consideration of the following descriptions in connection with accompanying drawings in which:

[0012] Figures 1a and 1b provide a top-down and side view of a substrate tray  
15 designed to hold substrates;

[0013] Figures 2a-c provide views of a vacuum pickup attempting to pick up substrates where some of the substrates are not lying flat in the substrate tray;

[0014] Figures 3a-d provide views of a vacuum pickup picking up substrates  
20 with use of an apparatus for ensuring that the substrates are flat when

9. An apparatus for lifting substrates in a semiconductor packaging process, the apparatus comprising:

a plate with a plurality of protrusions;

5 a substrate tray with a plurality of depressions and a hole in each depression coupled to the plate, the substrate tray to hold a substrate in each depression;

a lifting device with a plurality of vacuum pads coupled to the substrate tray, the lifting device to attach to the substrates and lift the substrates out of the substrate tray;

10 a first actuator coupled to the plate, the first actuator to raise and lower the plate; and

a second actuator coupled to the flipping device, the second actuator to lower and raise the lifting device.

15 10. The apparatus of claim 9, wherein the protrusions are flat at their tops.

11. The apparatus of claim 10, wherein the protrusions are rectangular in cross section.

20